Estimates of the summary AUC under three settings of (c_1, c_2)

$(\tau_1^2, \tau_2^2) = (0.5, 0.5)$

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Table 1: Summary of the SAUC estimates under the true selective publication mechanism of $(c_1, c_2) = (1/\sqrt{2}, 1/\sqrt{2})$

			$S = 15$	$S = 25$	$S = 50$
No.	Methods	True	Median (Q1, Q3)	Median (Q1, Q3)	Median (Q1, Q3)
1	Proposed $(\hat{c}_1, \hat{c}_2)$	62.0	66.1 (45.2, 77.2)	64.3 (50.7, 74.1)	62.5 (52.0, 70.4)
	Proposed $(c_1 = c_2)$		65.8 (42.5, 76.6)	64.4 (51.5, 74.3)	63.3 (53.9, 70.6)
	Proposed $(c_1 = 0)$		69.3 (51.1, 78.3)	69.5 (59.8, 76.3)	69.2 (63.5, 73.9)
	Heckman-type		67.5 (52.1, 76.7)	68.4 (57.9, 74.4)	66.8 (60.3, 71.9)
	Reistma$_O$		69.8 (53.6, 78.7)	69.7 (61.1, 76.6)	69.4 (64.1, 74.3)
	Reistma$_P$		63.3 (48.5, 73.0)	62.2 (53.7, 69.6)	62.0 (56.5, 67.1)
2	Proposed $(\hat{c}_1, \hat{c}_2)$	70.2	72.4 (61.2, 78.9)	71.0 (62.5, 76.3)	71.1 (65.3, 75.1)
	Proposed $(c_1 = c_2)$		72.0 (59.7, 78.6)	71.0 (62.7, 76.6)	71.0 (65.3, 75.1)
	Proposed $(c_1 = 0)$		74.1 (65.9, 79.8)	73.4 (67.8, 77.9)	73.6 (70.4, 76.7)
	Heckman-type		72.5 (63.6, 78.0)	71.8 (64.6, 76.3)	71.9 (67.2, 75.2)
	Reistma$_O$		74.4 (66.5, 79.9)	73.7 (68.8, 78.1)	74.1 (70.7, 77.0)
	Reistma$_P$		71.5 (63.5, 76.9)	70.5 (64.7, 74.7)	70.3 (66.8, 73.4)
3	Proposed $(\hat{c}_1, \hat{c}_2)$	84.6	84.1 (77.9, 87.5)	84.6 (79.7, 87.2)	84.6 (81.5, 86.6)
	Proposed $(c_1 = c_2)$		83.8 (76.7, 87.3)	84.6 (79.1, 87.1)	84.7 (81.4, 86.7)
	Proposed $(c_1 = 0)$		84.4 (78.6, 87.7)	85.1 (81.0, 87.4)	85.5 (83.3, 87.1)
	Heckman-type		84.8 (79.4, 87.9)	85.5 (82.1, 87.5)	86.1 (83.9, 87.5)
	Reistma$_O$		85.5 (80.3, 88.4)	86.2 (83.2, 88.2)	86.7 (84.8, 88.1)
	Reistma$_P$		83.6 (78.1, 86.4)	84.2 (80.7, 86.5)	84.5 (82.5, 86.0)
4	Proposed $(\hat{c}_1, \hat{c}_2)$	86.4	85.9 (82.8, 87.9)	86.3 (84.2, 87.8)	86.4 (85.1, 87.4)
	Proposed $(c_1 = c_2)$		85.9 (82.3, 87.8)	86.3 (84.2, 87.8)	86.4 (85.1, 87.5)
	Proposed $(c_1 = 0)$		86.2 (83.3, 88.0)	86.5 (84.6, 88.0)	86.8 (85.6, 87.7)
	Heckman-type		86.3 (83.2, 88.0)	86.5 (84.8, 88.0)	86.8 (85.6, 87.7)
	Reistma$_O$		87.0 (84.4, 88.6)	87.3 (85.8, 88.5)	87.6 (86.6, 88.4)
	Reistma$_P$		85.8 (83.6, 87.5)	86.1 (84.5, 87.5)	86.3 (85.2, 87.2)
5	Proposed $(\hat{c}_1, \hat{c}_2)$	87.7	85.7 (79.5, 89.4)	86.7 (82.5, 89.4)	87.6 (84.9, 89.4)
	Proposed $(c_1 = c_2)$		85.4 (78.8, 89.3)	86.5 (82.6, 89.4)	87.4 (85.1, 89.3)
	Proposed $(c_1 = 0)$		84.5 (77.2, 88.9)	85.6 (80.8, 89.1)	86.3 (83.5, 88.7)
	Heckman-type		86.0 (80.0, 89.6)	86.6 (82.5, 89.6)	87.2 (84.8, 89.5)
	Reistma$_O$		86.0 (79.1, 89.8)	87.1 (83.0, 89.9)	87.7 (85.4, 89.8)
	Reistma$_P$		86.1 (80.9, 89.2)	87.2 (83.8, 89.3)	87.5 (85.5, 89.1)
6	Proposed $(\hat{c}_1, \hat{c}_2)$	83.5	82.6 (76.0, 87.2)	83.8 (79.0, 87.4)	84.0 (81.1, 86.8)
	Proposed $(c_1 = c_2)$		82.3 (76.0, 86.9)	83.6 (79.3, 87.1)	83.7 (80.8, 86.5)
	Proposed $(c_1 = 0)$		81.0 (74.6, 86.3)	82.2 (77.7, 86.1)	82.7 (79.8, 85.5)
	Heckman-type		82.5 (76.7, 87.1)	83.8 (79.5, 86.7)	83.5 (80.6, 86.3)
	Reistma$_O$		82.5 (76.9, 87.1)	83.9 (80.1, 87.1)	84.1 (81.5, 86.6)
	Reistma$_P$		82.5 (76.8, 86.7)	83.3 (79.6, 86.5)	83.3 (80.8, 85.7)

Median with 25th empirical quartile (Q1) and 75th empirical quartile (Q3) and convergence rate (CR) are reported. No. correspond

Table 2: Summary of the SAUC estimates under the true selective publication mechanism of $(c_1, c_2) = (1, 0)$

No.		True	$S = 15$	$S = 25$	$S = 50$	$S = 200$
			Median (Q1, Q3)	Median (Q1, Q3)	Median (Q1, Q3)	Median (Q1, Q3)
1	Proposed $(\hat{c}_1, \hat{c}_2)$	62.0	63.2 (47.5, 74.7)	63.1 (50.9, 71.5)	62.9 (54.5, 69.2)	63.7 (59.7, 67.0)
	Proposed $(c_1 = 1)$		64.2 (47.1, 75.2)	64.8 (51.3, 73.1)	62.7 (54.9, 69.9)	62.3 (57.9, 65.5)
	Proposed $(c_1 = c_2)$		62.2 (48.0, 74.5)	62.8 (51.3, 72.0)	63.9 (56.4, 70.1)	65.2 (62.1, 68.0)
	Heckman-type		61.3 (48.4, 71.9)	62.4 (51.7, 69.9)	60.8 (53.8, 66.8)	59.9 (55.4, 63.4)
	Reistma$_O$		66.3 (51.9, 75.6)	66.6 (56.4, 73.9)	66.1 (60.8, 71.4)	66.0 (63.0, 68.6)
	Reistma$_P$		63.3 (48.5, 73.0)	62.2 (53.7, 69.6)	62.0 (56.5, 67.1)	61.8 (59.1, 64.6)
2	Proposed $(\hat{c}_1, \hat{c}_2)$	70.2	69.4 (57.5, 77.1)	69.9 (60.4, 75.3)	70.1 (64.3, 74.0)	70.5 (68.4, 72.3)
	Proposed $(c_1 = 1)$		71.3 (59.0, 77.9)	71.1 (63.0, 75.9)	71.1 (65.9, 74.8)	70.3 (68.3, 72.1)
	Proposed $(c_1 = c_2)$		69.3 (57.3, 77.1)	69.5 (60.3, 75.0)	70.4 (64.7, 74.5)	71.2 (69.1, 72.9)
	Heckman-type		67.3 (55.9, 74.8)	66.9 (58.0, 72.8)	67.2 (59.7, 71.7)	65.9 (61.7, 69.1)
	Reistma$_O$		71.6 (61.6, 78.0)	71.7 (65.5, 76.0)	71.8 (67.7, 75.2)	71.7 (70.0, 73.3)
	Reistma$_P$		71.5 (63.5, 76.9)	70.5 (64.7, 74.7)	70.3 (66.8, 73.4)	70.1 (68.5, 71.7)
3	Proposed $(\hat{c}_1, \hat{c}_2)$	84.6	82.9 (75.0, 86.8)	84.1 (78.9, 86.7)	84.2 (80.6, 86.4)	84.5 (83.0, 85.5)
	Proposed $(c_1 = 1)$		83.0 (75.4, 86.9)	84.4 (80.2, 86.9)	84.5 (81.2, 86.5)	84.6 (83.4, 85.7)
	Proposed $(c_1 = c_2)$		82.9 (74.1, 87.0)	84.1 (79.2, 86.8)	84.5 (81.0, 86.6)	84.9 (83.5, 86.0)
	Heckman-type		83.3 (77.2, 87.2)	84.8 (80.9, 87.0)	85.1 (82.3, 86.8)	85.3 (84.1, 86.3)
	Reistma$_O$		84.3 (77.8, 87.7)	85.8 (82.2, 87.7)	86.0 (83.6, 87.7)	86.3 (85.3, 87.1)
	Reistma$_P$		83.6 (78.1, 86.4)	84.2 (80.7, 86.5)	84.5 (82.5, 86.0)	84.6 (83.7, 85.5)
4	Proposed $(\hat{c}_1, \hat{c}_2)$	86.4	85.5 (81.9, 87.7)	85.9 (83.7, 87.6)	86.2 (84.9, 87.4)	86.4 (85.8, 86.9)
	Proposed $(c_1 = 1)$		85.5 (82.2, 87.8)	86.1 (83.9, 87.7)	86.4 (85.0, 87.4)	86.4 (85.9, 87.0)
	Proposed $(c_1 = c_2)$		85.5 (81.7, 87.6)	86.1 (83.8, 87.8)	86.5 (85.2, 87.7)	86.7 (86.1, 87.3)
	Heckman-type		85.5 (81.6, 87.5)	85.9 (83.7, 87.6)	86.4 (84.8, 87.4)	86.4 (85.6, 87.0)
	Reistma$_O$		86.4 (83.6, 88.3)	87.0 (85.1, 88.4)	87.4 (86.4, 88.3)	87.6 (87.1, 88.0)
	Reistma$_P$		85.8 (83.6, 87.5)	86.1 (84.5, 87.5)	86.3 (85.2, 87.2)	86.4 (85.9, 86.8)
5	Proposed $(\hat{c}_1, \hat{c}_2)$	87.7	86.7 (80.0, 90.1)	88.0 (84.2, 90.3)	88.6 (86.3, 90.0)	88.2 (86.9, 89.3)
	Proposed $(c_1 = 1)$		85.5 (77.8, 89.3)	86.8 (82.3, 89.7)	87.8 (85.1, 89.5)	87.7 (86.5, 88.8)
	Proposed $(c_1 = c_2)$		86.7 (79.8, 90.0)	88.4 (85.0, 90.5)	89.0 (87.1, 90.3)	89.2 (88.3, 89.8)
	Heckman-type		87.4 (81.5, 90.6)	88.8 (85.1, 90.9)	89.3 (87.0, 90.6)	89.3 (88.3, 90.2)
	Reistma$_O$		86.9 (79.4, 90.3)	88.5 (84.7, 90.8)	89.2 (86.9, 90.7)	89.3 (88.4, 90.1)
	Reistma$_P$		86.1 (80.9, 89.2)	87.2 (83.8, 89.3)	87.5 (85.5, 89.1)	87.7 (86.7, 88.5)
6	Proposed $(\hat{c}_1, \hat{c}_2)$	83.5	83.2 (75.7, 88.2)	84.9 (79.4, 88.4)	84.7 (81.2, 87.6)	84.0 (82.2, 85.6)
	Proposed $(c_1 = 1)$		81.7 (74.6, 86.9)	83.6 (78.4, 87.3)	83.7 (80.5, 86.3)	83.5 (82.0, 84.8)
	Proposed $(c_1 = c_2)$		83.7 (76.5, 88.3)	85.1 (80.5, 88.4)	85.5 (82.4, 87.9)	85.2 (83.8, 86.4)
	Heckman-type		84.5 (78.0, 88.8)	85.3 (80.5, 88.6)	85.8 (82.8, 88.3)	85.7 (84.3, 87.1)
	Reistma$_O$		83.0 (76.2, 88.1)	84.9 (80.3, 88.2)	85.4 (82.3, 87.7)	85.3 (84.0, 86.5)
	Reistma$_P$		82.5 (76.8, 86.7)	83.3 (79.6, 86.5)	83.3 (80.8, 85.7)	83.4 (82.2, 84.5)

Median with 25th empirical quartile (Q1) and 75th empirical quartile (Q3) and convergence rate (CR) are reported. No. corresponds to the scenario number. S denotes the number of population studies. True denotes the true value of the SAUC. Proposed $(hatc_1, hatc_2)$, Proposed $(c_1 = 1)$, and Proposed $(c_1 = c_2)$ denote the proposed method that estimates (c_1, c_2), correctly specifies $(c_1, c_2) = (1, 0)$, and misspecifies $(c_1, c_2) = (1/sqrt2, 1/sqrt2)$, respectively; Heckman-type denotes the method of Piao et al.; Reitsma$_O$ and Reitsma$_P$ denote the Reitsma model based on N published studies and S population studies, respectively. All the entries are multiplied by 100.

Table 3: Summary of the SAUC estimates under the true selective publication mechanism of $(c_1, c_2) = (0, 1)$

No.		True	$S = 15$	$S = 25$	$S = 50$	$S = 200$
			Median (Q1, Q3)	Median (Q1, Q3)	Median (Q1, Q3)	Median (Q1, Q3)
1	Proposed $(\hat{c}_1, \hat{c}_2)$	62.0	56.3 (33.3, 72.5)	56.0 (39.8, 68.9)	55.9 (42.6, 65.3)	58.2 (52.8, 63.2)
	Proposed $(c_1 = 0)$		62.2 (41.4, 74.4)	62.7 (51.5, 72.3)	62.4 (54.7, 68.7)	61.9 (57.8, 65.2)
	Proposed $(c_1 = c_2)$		54.8 (32.1, 72.3)	54.3 (38.3, 68.6)	55.4 (42.2, 64.1)	54.7 (49.1, 60.1)
	Heckman-type		59.5 (39.4, 73.0)	60.2 (46.0, 70.6)	60.1 (49.7, 67.4)	59.2 (54.5, 63.5)
	Reistma$_O$		62.7 (40.8, 75.2)	63.6 (51.2, 73.1)	62.7 (55.2, 69.3)	62.3 (58.3, 65.8)
	Reistma$_P$		63.3 (48.5, 73.0)	62.2 (53.7, 69.6)	62.0 (56.5, 67.1)	61.8 (59.1, 64.6)
2	Proposed $(\hat{c}_1, \hat{c}_2)$	70.2	69.6 (51.8, 78.2)	67.3 (53.8, 75.1)	68.0 (60.3, 73.2)	68.7 (65.8, 71.1)
	Proposed $(c_1 = 0)$		71.2 (59.2, 78.9)	69.9 (61.2, 75.8)	70.6 (65.8, 74.4)	70.1 (68.1, 72.1)
	Proposed $(c_1 = c_2)$		69.1 (48.7, 78.0)	66.7 (51.2, 75.2)	67.9 (60.1, 73.2)	67.1 (63.9, 70.1)
	Heckman-type		69.9 (55.7, 77.7)	68.0 (57.8, 74.4)	68.7 (62.3, 73.1)	68.6 (65.3, 71.0)
	Reistma$_O$		72.2 (59.3, 79.3)	70.6 (61.5, 76.5)	71.3 (66.6, 75.1)	70.8 (68.8, 72.8)
	Reistma$_P$		71.5 (63.5, 76.9)	70.5 (64.7, 74.7)	70.3 (66.8, 73.4)	70.1 (68.5, 71.7)
3	Proposed $(\hat{c}_1, \hat{c}_2)$	84.6	82.1 (69.4, 86.6)	82.9 (74.6, 86.6)	83.5 (78.6, 86.0)	84.1 (82.3, 85.4)
	Proposed $(c_1 = 0)$		83.3 (74.0, 87.2)	84.0 (78.3, 87.1)	84.6 (81.4, 86.7)	84.6 (83.3, 85.7)
	Proposed $(c_1 = c_2)$		81.6 (68.0, 86.4)	82.5 (74.1, 86.5)	82.9 (77.9, 85.8)	83.1 (80.8, 84.8)
	Heckman-type		82.2 (71.2, 86.4)	82.9 (75.3, 86.2)	83.3 (78.8, 85.9)	83.2 (81.1, 84.8)
	Reistma$_O$		83.5 (73.8, 87.6)	84.5 (78.3, 87.4)	85.0 (81.6, 87.0)	84.9 (83.6, 86.1)
	Reistma$_P$		83.6 (78.1, 86.4)	84.2 (80.7, 86.5)	84.5 (82.5, 86.0)	84.6 (83.7, 85.5)
4	Proposed $(\hat{c}_1, \hat{c}_2)$	86.4	85.0 (80.6, 87.5)	85.5 (82.5, 87.3)	85.7 (83.9, 87.1)	86.1 (85.4, 86.8)
	Proposed $(c_1 = 0)$		85.5 (82.0, 87.9)	86.1 (83.7, 87.7)	86.3 (84.8, 87.4)	86.4 (85.8, 87.0)
	Proposed $(c_1 = c_2)$		85.0 (79.6, 87.5)	85.3 (82.2, 87.3)	85.5 (83.5, 87.1)	85.8 (84.9, 86.5)
	Heckman-type		85.0 (80.1, 87.1)	85.3 (81.7, 87.1)	85.4 (83.1, 86.8)	85.4 (84.5, 86.2)
	Reistma$_O$		85.9 (82.3, 88.1)	86.4 (84.0, 88.0)	86.7 (85.2, 87.8)	86.8 (86.1, 87.3)
	Reistma$_P$		85.8 (83.6, 87.5)	86.1 (84.5, 87.5)	86.3 (85.2, 87.2)	86.4 (85.9, 86.8)
5	Proposed $(\hat{c}_1, \hat{c}_2)$	87.7	82.4 (72.6, 87.4)	83.8 (76.9, 87.7)	86.1 (82.4, 88.3)	87.1 (85.5, 88.3)
	Proposed $(c_1 = 0)$		84.3 (76.4, 88.4)	86.0 (80.1, 88.7)	87.2 (84.5, 88.9)	87.6 (86.4, 88.6)
	Proposed $(c_1 = c_2)$		82.3 (72.6, 87.2)	84.3 (77.6, 87.6)	86.3 (82.9, 88.3)	87.5 (86.1, 88.5)
	Heckman-type		83.5 (75.7, 87.9)	85.1 (80.3, 88.1)	86.2 (83.6, 88.1)	87.1 (85.9, 88.1)
	Reistma$_O$		83.2 (73.1, 87.7)	84.8 (77.0, 88.2)	86.7 (83.2, 88.7)	87.6 (86.2, 88.6)
	Reistma$_P$		86.1 (80.9, 89.2)	87.2 (83.8, 89.3)	87.5 (85.5, 89.1)	87.7 (86.7, 88.5)
6	Proposed $(\hat{c}_1, \hat{c}_2)$	83.5	78.7 (69.4, 84.9)	80.9 (75.1, 85.4)	82.2 (78.3, 85.4)	82.4 (80.7, 84.1)
	Proposed $(c_1 = 0)$		80.9 (73.1, 85.9)	82.8 (77.7, 86.3)	83.4 (80.3, 86.0)	83.4 (82.0, 84.8)
	Proposed $(c_1 = c_2)$		78.7 (69.2, 84.9)	81.1 (75.3, 85.3)	82.6 (78.8, 85.4)	82.8 (81.2, 84.3)
	Heckman-type		80.0 (72.4, 85.4)	82.0 (76.9, 85.9)	83.0 (79.7, 85.7)	83.5 (81.6, 85.3)
	Reistma$_O$		79.0 (70.1, 85.1)	81.4 (75.5, 85.7)	82.8 (79.2, 85.6)	82.8 (81.4, 84.3)
	Reistma$_P$		82.5 (76.8, 86.7)	83.3 (79.6, 86.5)	83.3 (80.8, 85.7)	83.4 (82.2, 84.5)

Median with 25th empirical quartile (Q1) and 75th empirical quartile (Q3) and convergence rate (CR) are reported. No. corresponds to the scenario number. S denotes the number of the population studies. True denotes the the true value of the SAUC. Proposed $(hatc_1, hatc_2)$, Proposed $(c_1 = 1)$, and Proposed $(c_1 = c_2)$ denote the proposed method that estimates (c_1, c_2), correctly specifies $(c_1, c_2) = (0, 1)$, and misspecifies $(c_1, c_2) = (1/sqrt2, 1/sqrt2)$, respectively; Heckman-type denotes the method of Piao et al.; Reitsma$_O$ and Reitsma$_P$ denote the Reitsma model based on N published studies and S population studies, respectively. All the entries are multiplied by 100.